Testimony before the
House Committee on Homeland Security
Subcommittee on Economic Security, Infrastructure Protection, and Cybersecurity

"Leveraging Technology to Improve Aviation Security"

Presented by

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Thank you Chairman Lungren, Congresswoman Sanchez, and members of the committee. I am honored to testify before this committee on the critical issue of improving aviation security. Sadly, as the events in London last week demonstrate, we are locked in an ongoing fight against terrorism and we must continue to harden and improve our defenses against these ever changing threats.

I am Deepak Chopra, Chairman and CEO of OSI Systems. OSI Systems is the parent company of Rapiscan Systems, a global company based in Los Angeles, California which offers the world's widest array of non-intrusive inspection systems for airports, seaports, land borders, mass transit modes and other secure locations.

Rapiscan Systems has installed more than 50,000 inspection systems in over 150 countries around the world. We currently provide nearly 50 percent of all U.S. airport checkpoint screening systems. Rapiscan also delivers border and sea port inspection systems for U.S. Customs and Border Protection and other international customs agencies. The State Department employs our systems at every office around the world. And the systems we all walked through to gain entry to this building were made by Rapiscan Systems.

Rapiscan Systems invents, develops, manufactures, installs and services nearly every type of non-intrusive inspection technology in the world. We therefore understand better than anyone, the strengths and limitations of all these systems and can help security officials employ the best technology for any detection and operational requirement.

Rapiscan Systems is a leader in aviation security with installations at the world's most secure airports

Rapiscan Systems is the leader in providing aviation security technology globally. For example, Ben Gurion Airport in Tel Aviv, Heathrow Airport in England, Dulles Airport, Taipei Airport, Kiev Airport, and over 300 other airports around the world rely on Rapiscan Systems' technologies to protect passengers. After September 11, the United States government called on Rapiscan Systems for an emergency deployment of hundreds of additional systems to U.S. airports.

Air travel is more secure since 9-11, but relies too heavily on either old, slow or expensive technology

Today, nearly four years after the 9-11 attacks, I can say that aviation security is clearly stronger. However, there is still much room for improvement. While much of the focus today will be on technological advances in explosive and weapons detection, we must pay equal attention to how technology affects airport operations and the traveling public. Passengers are frustrated with the slow pace of air travel and we should not just provide more inspection for inspections sake. One of the most significant errors in the post 9-11 world has been the rush to install checked baggage inspection equipment with too little attention to its impact on airport operations. The aviation industry and the traveling public clearly want a secure civil aviation system. But long lines, inconsistent inspection procedures, and a beleaguered airline industry are not acceptable outcomes of increased aviation security.

I believe that we continue to focus too much on old technology solutions. Today, every U.S. airport uses the same technology for checkpoint, passenger and checked baggage screening that was in use before 9-11. More astonishing, is that not one new technology has been deployed aviation system-wide since 9-11. This is after Congress appropriated billions of taxpayer dollars to develop new baggage screening technologies.

TSA and the aviation security industry should be evaluating and installing technology that not only improves detection, but also facilitates the flow of passengers and their baggage. The time of endless pilot programs and reluctance to move past old technology should be over.

Moving beyond the focus on EDS technology

Today's aviation passenger security checkpoint is an amalgam of various screening systems from transmission x-ray, metal detection, to trace detection. These systems have all been tested and approved by TSA but deployed as independent technologies at checkpoints. Some have suggested adding yet another stand-alone technology, EDS, to this mix, in essence deploying the technology used for checked baggage inspection to the checkpoint.

I could not disagree more with this opinion. Clearly these systems have a role for checked baggage, as you heard from the first panel. However, EDS systems are either too big, too slow, and too expensive for passenger checkpoints. Installing EDS systems will reduce the number of checkpoints, slow the inspection process, impose massive infrastructure costs on airports, lengthen passenger lines and require even more TSA screeners without improving security.

Addressing aviation security from the passenger's perspective

At Rapiscan, we have addressed the challenge of improving checkpoints from the passenger's perspective. We have asked how can we maximize the current technology install base and improve security without impeding passenger or baggage flow, or add huge infrastructure costs to airports. We have developed four answers to this question:

1) QXR-Integrate current systems with new automatic detection technologies in one common platform;
2) Secure 1000--Scan for multiple threats in one inspection;

3) Checkpoint Efficiency System—Automate the passenger checkpoint and double checkpoint throughput with no additional screeners; and
4) CXR—Use in-line next generation systems to quadruple baggage throughput.

QXR—Integrate current systems with new automatic detection technology into one efficient airport checkpoint

Rapiscan Systems has developed a new checkpoint technology utilizing our current transmission x-ray systems and integrating Quadrapole Resonance technology in one single platform. This system adds automatic explosive detection to deployed systems and provides nearly equivalent detection performance to checked-baggage EDS systems. QXR systems automatically detect explosives. Therefore, they can be installed without adding a single extra TSA screener.

Because the QXR system leverages currently installed TRX systems, there is little additional training and almost no additional operational requirements for TSA screeners or airport personnel. These systems are simply added to the already deployed checkpoint x-ray systems. This allows TSA to leverage its install base instead of throwing out all the current machines and replacing them with costly and inefficient EDS systems.

The QXR integrated system limits bag tracking and loss issues associated with multiple technologies at a checkpoint. And, most importantly, they would cost 1/3 as much as proposed EDS checkpoint technologies in terms of both capital and operation costs.

Secure 1000—Scan for multiple threats in one inspection

Currently, U.S. airports employ a complex system of metal detection gates, trace detection machines, and physical pat-downs to inspect passengers for weapons, explosives, and other hazardous materials. This process employs a number of imperfect technologies and invasive procedures that have known strengths and weaknesses. However, aviation security can be improved and passenger hassles reduced if we install fewer systems that achieve even better results.

One such system is the Secure 1000, Backscatter Personnel Screener. This technology is the only commercially available, deployable system existing today that can inspect people for metallic objects, plastic and ceramic weapons, explosives, and non-metallic threats like explosives and glass shrapnel. It would have detected the weapons used by the 9-11 terrorists and is being deployed to catch suicide bombers around the world. This technology has been successfully deployed by U.S. armed forces in Iraq and Afghanistan, as well as U.S. Customs and Border Protection and other homeland security agencies where improving security is the most important mission. Because of the worldwide deployments of Secure 1000, Rapiscan Systems is in the position to deliver it to U.S. airports today without the least bit of delay.

In a recently completed pilot program at Heathrow Airport, British aviation security officials put the Secure 1000 through a four month test at a fully operational checkpoint. Passengers were given the option of being screened by the Secure 1000 or by physical pat down search. Not only did the Secure 1000 show a dramatic increase in detection capability over pat-downs, but nearly 95 (93.7%) percent of all passengers opted to be screened by the Secure 1000 over a pat-down search.

The British have found a way to answer the critics concerned about the Secure 1000's impact on passenger privacy. Using simple inspection protocols of employing same-sex screeners, non-archived images and other steps, British officials have developed an inspection system palatable to the traveling public. This has enabled the British to take the lead in passenger inspection security. It is important to remember that the Secure 1000 is an alternative to the very unpopular, less effective, and highly-intrusive physical pat down search. So while much has been made in the media about the potential privacy issues of backscatter inspection, the traveling public clearly prefers this method to invasive and imperfect physical searches.

From a security standpoint, the Secure 1000 provides comprehensive primary or secondary screening for all threats in one machine, reducing training, maintenance, and operating costs. And since the Secure 1000 is designed specifically to fit within the aviation checkpoint footprint, it can seamlessly integrate with the metal detection gates at most airports.

Checkpoint Efficiency System—Automating the airport passenger checkpoint
The modern airport checkpoint is a maze of lines and security systems packed into small throughways. Even the most seasoned traveler has trouble navigating this hectic environment. Rapiscan Systems has created a simple structure that helps screeners track bags and people requiring secondary screening while continuing to allow the checkpoint line to process additional passengers.

A recent TSA analysis found that most of the delay at passenger checkpoints comes from screeners having to stop checkpoint lanes to move and inspect bags for secondary screening, taking more than two additional minutes per passenger on average. Rapiscan's Checkpoint Efficiency System easily fits onto currently deployed checkpoint x-ray equipment and automatically separates bags for secondary screening enabling the checkpoint to continue to screen passengers. The system is designed to double the throughput speed of a standard airport screening lane.

Additionally, the Checkpoint Efficiency System only adds about a foot of width to a standard checkpoint while doubling capacity. This enables fewer checkpoints to process more passengers faster, with less bag tracking confusion and delay. The system also protects passengers from suspect baggage behind protective barriers. And, by automating the secondary screening process, the Checkpoint Efficiency System reduces labor costs and passenger wait times.

Los Angeles International Airport will be installing the Checkpoint Efficiency System at its new terminal, and many airports have asked Rapiscan for these systems. We are awaiting final approval from TSA on their deployment.

CXR—Use in-line next generation systems to quadruple baggage throughput
While most of the discussion on this panel has focused on the checkpoint, I wanted to take a moment to discuss one advance coming from Rapiscan Systems' labs that is applicable to both the checkpoint and checked baggage inspection. This new technology, the CXR electronic CT, represents a dramatic leap forward in the basic EDS technology.

EDS systems, even current in-line models, are hampered by an inherent limitation of the basic technology. In standard EDS machines, an x-ray head spins around on a metal ring to provide a 360 degree view of the target bag. However, this design limits throughput to the speed the x-ray head can spin. And, with such heavy reliance on a mechanical moving part, maintenance costs are high and reliability suffers. Due to their slow throughput, multiple EDS systems have to be deployed to meet standard throughput demands of the in-line conveyor systems in airports. This dramatically increases equipment purchase, installation, operation and maintenance costs. And as any airport executive can tell you, the infrastructure costs of installing all these EDS machines has been astronomical.

Rapiscan Systems has been developing over the last 2 ½ years an electronic, a non-mechanical CT, the CXR. We have done this development without any funding from the U.S. government. This system relies on a specialized glass tube ring filled with x-ray diodes that can within nanoseconds provide the same (if not better) 360 degree image of a bag without the speed and reliability limitations of standard EDS. The CXR should provide scan speeds that will quadruple baggage throughput to almost 1,400 bags per hour. This is done without any moving parts thereby dramatically reducing maintenance costs and improving reliability.

Rapiscan has already received significant interest from European aviation officials in this technology where speed of operation is paramount. The inspection speed and cost advantages are significant as a single unit can provide the inspection capacity of four current EDS machines. The system will work both for checkpoint and check baggage locations and represent a true next-generation solution for aviation EDS.

I want to again thank the committee for the opportunity to discuss these important issues and technological advancements. Rapiscan Systems is proud to be part of the United States homeland security effort and we take seriously our role as a final line of defense. Rapiscan Systems has designed and deployed many of the systems we rely on to catch terrorists today. We look forward to continuing to work with Congress and the Department of Homeland Security to bring the newest and most advanced technologies from the laboratories to the front line. I am happy to answer any of your questions.